

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 20 March 2001 (20.03.01)	
International application No. PCT/GB00/02537	Applicant's or agent's file reference P385WO
International filing date (day/month/year) 30 June 2000 (30.06.00)	Priority date (day/month/year) 05 July 1999 (05.07.99)
Applicant TUCK, Richard, Allan et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 04 February 2001 (04.02.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).



The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Olivia TEFY Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P385WO		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB00/02537	International filing date (day/month/year) 30/06/2000	Priority date (day/month/year) 05/07/1999
International Patent Classification (IPC) or national classification and IPC H01J1/30		
Applicant PRINTABLE FIELD EMITTERS LIMITED et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 		
Date of submission of the demand 04/02/2001		Date of completion of this report 08.10.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer C ntmay r, F Telephone No. +49 89 2399 2167 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/02537

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
- Description, pages:**

1-31 as originally filed

Claims, No.:

1-51 as originally filed

Drawings, sheets:

1/5-5/5 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/02537

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-34
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-34
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-34
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02537

Reference is made to the following document:

D1: BAJIC S ET AL: "ENHANCED COLD-CATHODE EMISSION USING COMPOSITE RESIN-CARBON COATINGS" JOURNAL OF PHYSICS D. APPLIED PHYSICS, GB, IOP PUBLISHING, BRISTOL, vol. 21, 1988, pages 200-204, XP002017628 ISSN: 0022-3727 cited in the application

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The field emitter produced by the method according to claim 1 is a metal- insulator- metal-insulator-vacuum (MIMIV) structure with graphite particles as conducting (metal) components wherein the insulator is (MIMIV) structure with graphite particles wherein the silica is doped and/or heavily defective. A MIMIV structures with graphite particles is known from D1. None of the documents cited in the Search Report discloses or suggests silica as an insulator.

The method according to claim 1 and the field electron emitter according to claim 35 are therefore considered as new and involving an inventive step (Article 33 PCT).

Claims 2-34 and 36-50 are dependent on claim 1 or 35 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VII

Certain defects in the international application

Neither in the independent claims nor in the description it is expressed that graphite particles within a MIMIV structures were already known.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02537

R. Item VIII

Certain observations on the international application

1. Claim 51 contains a reference to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.
2. Claim 35 concerns a device. the simple reference to the method by which it has been produced is vague and leaves the reader in doubt as to the meaning of the technical features of the device, thereby rendering the definition of the subject-matter of claim 35-50 unclear (Article 6 PCT).
3. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
4. The expression "doped and/or heavily defective" for the silica is further explained on pages 13, 14 of the description. Claim 1 is therefore considered as sufficiently clear in the light of the description.

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P385W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 02537	International filing date (day/month/year) 30/06/2000	(Earliest) Priority Date (day/month/year) 05/07/1999
Applicant PRINTABLE FIELD EMITTERS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

METHOD OF CREATING A FIELD ELECTRON EMISSION MATERIAL AND FIELD ELECTRON EMITTER COMPRISING SAID MATERIAL

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PC 00/02537

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01J1/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, INSPEC, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BAJIC S ET AL: "ENHANCED COLD-CATHODE EMISSION USING COMPOSITE RESIN-CARBON COATINGS" JOURNAL OF PHYSICS D. APPLIED PHYSICS, GB, IOP PUBLISHING, BRISTOL, vol. 21, 1988, pages 200-204, XP002017628 ISSN: 0022-3727 cited in the application abstract page 200, right-hand column, paragraph 3; figure 4	1, 35
A	GB 2 304 989 A (TUCK RICHARD ALLAN ; LATHAM RODNEY VAUGHN (GB); TAYLOR WILLIAM (GB)) 26 March 1997 (1997-03-26) page 17, line 8-19; figures 3A, 3B page 18, line 1-7	1, 35

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

19 October 2000

Date of mailing of the international search report

27/10/2000

Name and mailing address of the ISA

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Authorized officer

Centmayer, F

INTERNATIONAL SEARCH REPORT

International Application No

P B 00/02537

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 99 31702 A (SHAH SYED ISMAT ULLAH ;DU PONT (US); AMEY DANIEL IRWIN JR (US); B0) 24 June 1999 (1999-06-24) abstract</p> <p>-----</p>	1, 35

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/02537

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2304989 A	26-03-1997	AU 6626096 A	05-03-1997
		CN 1192288 A	02-09-1998
		DE 69607356 D	27-04-2000
		EP 0842526 A	20-05-1998
		ES 2146890 T	16-08-2000
		WO 9706549 A	20-02-1997
		GB 2306246 A,B	30-04-1997
		JP 11510307 T	07-09-1999
		US 6097139 A	01-08-2000
WO 9931702 A	24-06-1999	EP 1040503 A	04-10-2000